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| 09/695,814      | 10/24/2000  | Stephen P. Turner    | H0001468            | 4269             |

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David G Latwesen Ph D  
Wells St John  
601 West First Avenue Suite 1300  
Spokane, WA 99201

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| EXAMINER |
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MCDONALD, RODNEY GLENN

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| ART UNIT | PAPER NUMBER |
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1753

DATE MAILED: 01/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/695,814

Applicant(s)

TURNER ET AL.

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 85-108 and 118 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 85,86,91-96 and 98-106 is/are rejected.
- 7) ☒ Claim(s) 87-90,97,107,108 and 118 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: IDS of 9-30-03 and 10-14-03.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 85, 86 and 91-96 are rejected under 35 U.S.C. 102(e) as being anticipated by Hasegawa et al. (U.S. Pat. 6,396,207).

Hasegawa et al. teach a sputtering target having a composition of Zr70%, V 25% and Fe 5% in weight ratio. (See Column 15 lines 20-23)

Claims 104-106 are rejected under 35 U.S.C. 102(b) as being anticipated by Schintlmeister et al. (U.S. Pat. 4,895,770).

Schintlmeister et al. teach a sputtering target comprised of Titanium boronitride having an 8% boron content. (Column 8 lines 60-62)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 98-103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi et al. (Japan 09-025562).

Takeshi et al. teach sputtering an **alloy target** in which greater than or equal to two kinds of elements among **Ti**, Si, Al, Ta, Mg, and **Zr** are mixed as a target. (See abstract)

In Figures 9 and 10 the composition of the alloy can be shown to be a majority of Zr present with for example Ti present in the range of 0-100 atomic% (See Figures 9 and 10)

The differences between Takeshi et al. and the present claims is that the purity level of the target material is not discussed.

As to the purity of the target material since the atomic concentration in Figures 9 and 10 adds to 100 atomic % Zr and Ti alloy, the alloy exists as 100% pure. (See Figures 9 and 10)

The motivation for controlling the alloy content in the target is that it allows the sputter deposition of layers with limited lattice defects. (See paragraph 0010-0012)

Therefore it would have been obvious to select the range of alloys and compositions within the range of Applicant's claims as taught by Takeshi et al. because it allows the sputter deposition of layers with limited lattice defects.

***Allowable Subject Matter***

Claims 87-90, 97, 107, 108 and 118 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 87 is allowable over the prior art of record because the prior art of record does not teach the claimed target with the Zr concentration within the target being at least 90%.

Claim 88 is allowable over the prior art of record because the prior art of record does not teach the claimed target with the Zr concentration within the target being at least 94%.

Claim 89 is allowable over the prior art of record because the prior art of record does not teach the claimed target with the Zr concentration within the target being at least 97%.

Claim 90 is allowable over the prior art of record because the prior art of record does not teach the claimed target with the Zr concentration within the target being at least 98%.

Claim 97 is allowable over the prior art of record because the prior art of record does not teach the claimed target including one or more elements selected from the group consisting of Mg, Al, B, Hf, Nb, Ni, Ta, Y and Ti.

Claim 107 is allowable over the prior art of record because the prior art of record does not teach the claimed target with the Ti concentration within the target being at least 94%.

Claim 108 is allowable over the prior art of record because the prior art of record does not teach the claimed target with the Ti concentration within the target being at least 97%.

Claim 118 is allowable over the prior art of record because the prior art of record does not teach the claimed target including the target consisting of Ti and B.

### ***Response to Arguments***

Applicant's arguments filed October 23, 2003 have been fully considered but they are not persuasive.

### ***RESPONSE TO ARGUMENTS:***

At the outset it should be noted that two new references to Hasegawa et al. and Schintlmeister et al. have been cited. Hasegawa et al. and Schintlmeister et al. have been relied upon to reject claims 85, 86, 91-96 and 104-106. The rejection of claims 98-103 has been maintained based on JP 09-25562 to Momono et al.

In response to the argument that Momono et al. does not teach the required Ti and Zr target composition of Applicant's claims, it is argued that Figs. 9 and 10 show targets in the required range of Applicant's claims with Ti ranging from 0-100% and Zr ranging from 0-100%. (See Momono et al. discussed above)

As to newly cited Hasegawa et al. it is believed that Hasegawa et al. teach the required target compositions for Applicant's claims.

As to newly cited Schintlmeister et al. it is believed that Schintlmeister et al. teach the required target compositions for Applicant's claims.

The Terminal Disclaimer overcomes the obviousness type double patenting rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 703-308-3807. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 703-308-3322. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Rodney G. McDonald  
Primary Examiner  
Art Unit 1753

RM  
December 22, 2003